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ABSTRACT

The Internet is becoming an increasingly important medium of electronic information dissemination, and thus an increasingly important library reference tool. This study examines the Internet skills of a sample group of 15 public reference librarians in the Adult Services Department at the Cleveland Heights Public Library. The Internet skills that these librarians currently have were achieved chiefly through colleague interaction (69%) and workshops (31%). Although all respondents have a computer terminal available for Internet searching, only 73% are trained in and perform this skill. The librarians are aware of and successfully operate the following Internet navigational tools: gopher (29%); telnet (19%); Archie (19%); file transfer protocol (Ftp) (17%); wide area information servers (WAIS) (8%); transmission control protocol/Internet protocol (TCP/IP) (8%). The majority of the librarians have access to an electronic mail (e-mail) account (60%), and all who have access have used e-mail at least once per week, 70% of them stating that they are "confident" in their use of system. In response to a survey question about the future of the Internet in libraries, 71% of the responding librarians think that the Internet will be the basis for future reference service. Appendices provide the survey cover letter and questionnaire. (Contains 11 references.) (MAS)

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CONTENT KNOWLEDGE OF THE INTERNET AMONG PUBLIC REFERENCE LIBRARIANS AT THE CLEVELAND HEIGHTS PUBLIC LIBRARY

A Master's Research Paper Submitted to the
Kent State University School of Library Science
in partial fulfillment of the requirements
for the degree Master of Library Science

by

Matthew J Augustine

September, 1994

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ABSTRACT

The purpose of this study was to survey and quantify the present depth of knowledge and experience reference librarians at the Cleveland Heights Public Library have of the Internet.

The study suggests that introduction to the Internet occurred through interaction with a colleague. This interaction with colleagues was most informative. There were computers with Internet access available to all staff members and of those that were trained to search on the Internet all did perform searches on the Internet. Most of this searching was performed at work, but the majority of librarians preferred to search the Internet at home. Staff awareness of Internet navigational tools and protocols was highest for Gopher and Telnet and lowest for Tcp/ip. A similar distribution occured for Gopher, Telnet and Tcp/ip when the staff was asked to name those navigational tools and protocols operated successfully. Lastly, a majority of librarians had access to Internet e-mail. A majority of this group used their accounts with confidence at least once per week.

Public Libraries that are attempting to integrate Internet services into their libraries' services should find this investigation of reference librarians at Cleveland Heights Public Library beneficial as they expend resources integrating the Internet into their library.

Master's Research Paper by

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M.A., Cleveland State University, 1991

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Approved by
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I. INTRODUCTION

The Internet is a current topic of interest among public reference librarians. It is the newest medium of electronic information dissemination. Electronic information is becoming, albeit in a juggernaut fashion, the preferred method of information dissemination for public library patrons. Patrons have become demanding in their desire to use bibliographic CD-ROM products, dial-in online public access catalogs (OPACs), public personal computers, etc., which are being supplied by many libraries free of charge. Consequently, the popularity of the Internet has made it the de facto "source" for current electronic information and the public reference librarian has to shoulder the responsibility of becoming a proficient Internet navigator and researcher. The burden of proficiency that has been placed on the librarian comes from different sources: the library profession itself, commercial electronic information services, and library patrons. All of these sources pressure the reference librarian to assume a burden of proficiency that is difficult to attain and maintain given the lack of staffing, funding, and time available on the job to search or maintain a presence on the Internet.

It is reasonable to state that the Internet has become

the "red badge of courage" for information professionals who have been and still are being caught off-guard by the increasing number of patrons who want to get at the wealth of information on the Internet.

It is the position of this investigator that public librarians hold the view that the Internet is similar to any other reference tool. This view is based on false assumptions. First, librarians assume that the information contained on the Internet is static. In fact, it is dynamic and amorphous - unlike a standard reference book where information changes much more slowly. Second, it is believed that the Internet is easily mastered. In actuality, the Internet does not have straightforward directional devices such as indexes, tables of contents, or call numbers which facilitate quick retrieval of information in the print medium. Lastly, it is an accepted notion that navigation on the Internet can be learned in a few hands-on training sessions or professional development workshops. In reality, the knowledge required to navigate the Internet requires the individual to spend a long and consistent amount of time on the Internet to become proficient and remain aware of changes - unlike a reference work with a format and content that could possibly remain relatively unchanged for years. The reference librarian's work

schedule must be adjusted to accommodate the time necessary for practicing on the Internet if any hope of proficiency is to be achieved.

An increasing number of libraries are finding that they must develop a competent staff that has the ability to incorporate electronic information, particularly the information contained on the Internet, into their existing reference services and collection development activities.

Providing the reference staff with adequate Internet training is the objective. Intrinsic to this objective is a query breakdown of components in the training requirement: What is the content of the training? Who will be the trainers? How will the training be implemented?

Purpose of the Study

The purpose of this study is to survey and quantify the depth of knowledge and experience reference librarians presently have of the Internet. Such a quantitative study which attempts to measure the depth of knowledge of reference librarians with regard to the Internet has not been previously performed. The hypothesis being tested is that knowledge and experience in navigating the Internet is low among public reference librarians.

Definitions of Terms

Archie - Archie is a tool for locating files that are held

on computers attached to the Internet which are available for transfer.

FTP - (File Transfer Protocol) Allows files to be transferred between two computers connected to the Internet.

Gopher - A software package developed at the University of Minnesota which allows for interactive searching, viewing, and retrieval via a menuing interface of files on the Internet.

Internet - The world-wide matrix of interconnected computer networks based on the standard communications protocol TCP/IP.

Listserv - Software that resides on a host computer which provide a common storage location of e-messages. These messages are then distributed to all people that have requested, or subscribed, to the listserv.

TCP/IP - (Transmission Control Protocol/Internet Protocol) A common communications protocol used by computers on the Internet to communicate between computers.

Telnet - Internet protocol which allows connection to a remote computer.

WAIS - (Wide Area Information Servers) Software which provides searching and retrieval of archived electronic texts information.

Limitations of the Study

This survey will be limited specifically to the Adult Services Reference Staff at the Cleveland Heights Public Library Main Branch on Lee Road in Cleveland Heights, Ohio. Consequently, the findings are not necessarily applicable to other public, special, or academic library reference staff. Furthermore, the findings only represent a sampling of knowledge and experience in a specific time period about a fluid phenomenon. The results and findings may change in a very short period of time and may no longer be applicable to the study group.

II. LITERATURE REVIEW

There are three issues that seem standard in the professional literature when addressing the integration of the Internet and the resources found there into a library. The issues are training, reference services, and collection development.

According to Joseph Matthews, there are two barriers that must be overcome before any training is undertaken. First, eliminate the belief that training is too expensive. Second, curtail staff resistance to change[1]. Brian Alley echoes this second statement by relating the experiences he had in 1983 when he was first introduced to an IBM PC -- which he learned to use through trial and error -- to the Internet of today. Alley readily admits that his learning curve in mastering the IBM PC was "steep and slippery." Alley found that his learning curve was smoothed out by the introduction of a word processing package. Through the word processor, he found the value of the PC. With analogy to the Internet, Alley believes that libraries and librarians need to maintain a presence on the Internet so that they can bring their intellectual tools of organization to the Internet to make it a more usable tool for information dissemination [2].

Once these two barriers are recognized and overcome,

the limitations of training must be acknowledged and goals must be set. Tennant finds the limitations of Internet training to be that: 1) the Internet is constantly changing; 2) there are multiple ways to accomplish the same task or search; 3) persons being trained have different levels of expertise; 4) there is no such thing as common knowledge about the Internet; and 5) equipment and software may fail at any time [3]. These five points should not be underestimated. Each of these limitations could separately prolong the training cycle causing frustration and increased costs.

Having accepted these limitations, goals must be established. McLaughlin proposes that proficiency in searching electronic resources be tied to performance reviews. He believes that a librarian in a public service department should have knowledge of and ability to present information about electronic, as well as print, resources. He further proposes, in conjunction with a supervisor, that the librarians set goals for acquiring skills to begin incorporating electronic resources into their collection development activities [4].

Next, the content of the training must be addressed. The content of the training sessions must be practical and "hands-on" in nature. In addition, there should be plenty

of handouts with definitions, transparencies, and as much time online as possible [5]. Brandt holds the position that librarians should be trained to get results, rather than to understand what a command is or how it works [6]. Combining these two positions, one finds that the content of an effective Internet training session should be outcome based. These authors believe that training should be geared toward saving time and effort while producing measurable results.

The most important issue to be addressed is selecting an Internet trainer. According to Lippert, there are two things to remember when selecting an Internet trainer: 1) no one person has the extra time to provide all of the training; and 2) no one person has the skills to provide all of the training [7]. Tennant cautions that there are certain characteristics to look for in a prospective Internet trainer. Tne trainer must: 1) know the topic well; 2) deliver information in simple, easy-to-understand terms; and 3) admit not knowing an answer and refer the question to someone who does [8].

Another topic to consider is how the training sessions will be implemented into the staff's schedules. Lippert's experience showed that a session had to be repeated until all staff had a chance to attend [9]. Therefore, it is fair to reason that an effective staff will have set goals for

themselves to practice regularly and be aware of changes taking place on the Internet.

Once plans have been established and implemented to train staff, the next issue must be addressed: integrating the Internet and the information found on it into the reference function. Diane Kovacs offers some significant insights for the public reference librarian when she points out that the most basic level of integrating Internet resources into a library's reference functions involves simply being aware of Internet information sources and services. This means that the librarian must regularly participate in such Internet services as e-mail and listservs. Second, during a reference interview, the librarian must make a conscious effort to promote Internet resources as a solution to a patron's problem along with traditional print sources [10].

Traditionally, Kovacs points out, librarians have sought to understand the information structure of a particular discipline or area of interest by gathering appropriate resources and offering access to this information through bibliographies, subject guides, indexes, etc. Bibliographic Instruction has been the means by which the librarian introduces the faculty member, student or patron to this body of resources [11]. This does not

presuppose that all electronic resources should be added to a collection. It has also been the traditional duty of the librarian to selectively evaluate the resources in a collection. Kovacs offers three tests to validate an electronic resource: 1) Don't believe everything you read [on the Internet]; 2) Determine the author; 3) Is the source of the electronic message credible? [12]

Yuan Zhou is deterministic about the migration of scholarly resources from print to electronic format. Zhou believes that it is only a matter of time before electronically published information constitutes the majority of a research library's holdings. He believes that "The traditional paper-based manual selection and acquisition processes will largely be replaced by selectors' workstations and automated procedures."[13] According to Zhou, this position is based on the philosophy that research libraries are migrating from the "traditions of ownership to the philosophy of access."[14] This position may be true for research libraries, where the investment in professional serials is a substantial amount of the annual budget and migrating to an electronic medium may solve budgetary constraints as well as facilitate faster and wider dissemination of information. However, for the public library, where budgets are divided amongst many departments

and projects, moving to a collection based largely on electronic sources would be unwise. Steve Cisler, a senior scientist at Apple Computers Library, points out that many public libraries are grappling with the decision to expend significant portions of their annual budgets on traditional library services or purchasing the necessary equipment and staff to achieve and support a connection to the Internet.[15] The debate over budgetary constraints may be alleviated somewhat by the telephone and cable television companies who are beginning to offer Internet connections to public institutions through existing cable lines which have already been installed in many public buildings. [16]

III. METHODOLOGY

A two-page questionnaire (see Appendix A), under the cover of a letter of introduction (see Appendix B), was distributed to reference staff librarians in the Adult Services Department at the Cleveland Heights Public Library. They were selected because the reference staff will be required in the near future to become familiar with and proficient in navigating an increasing array of electronic information sources - particularly the Internet. The Cleveland Public Library has proposed to supply a public access Internet connection, via a shared link with the local Cable Television company, to Cleveland Heights Public Library on two stand-alone public pc's. These two public-access personal computers will be running the latest public domain version of Mosaic - a computer program that provides graphically oriented navigation of the Internet.

Fifteen staff members received a questionnaire. Questionnaires were distributed and collected by hand. The questionnaire elicited such information as: how one became knowledgeable of the Internet and the extent to which one is familiar with the various Internet navigational tools and protocols; whether one has received training and how much time is spent on the Internet; the extent to which staff members use e-mail -- the basic function of the Internet.

and, lastly, the extent to which they see the integration of the Internet into the future reference function of the library. The data was analyzed in frequency and percentage distributions in table format.

IV. FINDINGS

The sample group consisted of fifteen public reference librarians in the Adult Services Department at the Cleveland Heights Public Library. The number of returned questionnaires was fifteen - resulting in a response rate of 100%. The data gathered has been categorized into five tables. The number N represents the total number of responses. The number f represents the number of individual responses. And, the percentage is calculated by dividing the number f by the number N multiplied by 100 which equals the percent response -- (f/N * 100 = % response).

Table 1 identifies the first source that made the librarians aware of the existence of the Internet. Nearly three-quarters (73%) of the librarians identified a colleague as their primary source of information concerning the existence of the Internet. Journals and newspapers were equally distributed at 13% respectively as the second and third sources which made the librarians aware of the existence of the Internet.

Table 1.

Distribution of Sources by Initial Internet Knowledge.

Source N=15	f	%
Journal	2	13
Colleague	11	73
Newspaper	2	13
Workshop	0	0
Total	15	100

In Table 2, the librarians were asked to identify the source that provided them with the most information about the Internet. The majority of librarians (69%) identified a professional journal as being the most informative source. The remaining 31% of respondents considered a workshop to be a useful source of introductory information about the Internet. It is interesting to note that newspapers and professional journals did not contain substantive information that the librarians considered useful concerning the Internet. Newspapers and journals seem to be fine mediums for introduction, but lack substantive information.

Table 2.

Distribution of Sources by Most Information Provided.

Source N=15	f	%
Journal	0	0
Colleague	9	69
Newspaper	0	0
Workshop	4	31
Total	13	100

Table 3 shows the percentage of librarians that 1) have been trained to search the Internet; 2) have a computer terminal with Internet access available to perform searches; and, 3) make an effort to search the Internet.

All respondents indicated that they had a computer terminal available to search the Internet. Nearly three-fourths (73%) of the librarians surveyed indicated that they were trained to search the Internet and an equal number actively performed searches on the Internet. In other words, those trained to search the Internet do search the Internet. However, nearly one third (27%) still do not search the Internet even though there was a terminal available. The terminal could have been a vt100 terminal or it could have been a personal computer.

Table 3.

Factors Related to Public Librarian's Use of the Internet.

Factor N=15	f	%
Trained to Search	11	73
Computer Available	15	100
Actively Search	11	73

Table 4 attempts to ascertain the location where the librarians perform most of their Internet searching. Slightly more than half (55%) indicated they spend the majority of their time searching the Internet at work. Less than half (45%) indicated they search the Internet from home. However, the preference among the majority of librarians (57%) was to search the Internet at home. The Library was chosen by only 43% of the respondents as the preferred location to search the Internet.

Table 4.

Distribution of Internet Searching by Actual and Preferred Locations.

Location	N	f	%
Majority of Search Time	11		
At Work		6	55
At Home		5	45
Total		11	100
Prefer to Search	14		
At Work		6	43
At Home		8	57
Total		14	100

Table 5 seeks to quantify the technical knowledge of the respondents regarding common Internet navigational tools and protocols. The librarians were asked to check all items that they were aware of and had successfully operated. Awareness and successful operation was highest for Gopher and lowest for Tcp/ip. Telnet and Archie ranked second and third respectively according to awareness and successful operation.

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Table 5.

Distribution of Navigational Tools and Protocol Awareness.

Navigational Tools	N	f	%
	52		
Gopher		15	29
Tcp/ip		4	8
Wais		4	8
Ftp		9	17
Telnet		10	19
Archie		10	19
Total		52	100

Table 6, in relation to table 5, shows the number and percentage of respondents that successfully operated the different Internet protocols and navigational tools. It is apparent that Gopher and Telnet were the two items that were operated successfully. Gopher received nearly half (48%) and Telnet a little less than one-third (26%). This is predictable because Cleveland Public Library offers an Internet Gopher at the librarian's reference terminals and access to OCLC's Firstsearch service via Telnet. It is worth noting that Tcp/ip was not operated successfully by any of the respondents. Tcp/ip is the underlying software

protocol that allows all of the Internet's navigational tools to function correctly. It is the one item in the list that demands a thorough understanding of computer networking to understand and operate successfully.

Table 6.

Distribution of Navigational Tools and Protocol Operated Successfully.

Navigational Tools	N	f	%
	27		
Gopher		13	48
Tcp/ip		0	0
Wais		2	7
Ftp		1	4
Telnet		7	26
Archie		4	15
Total		27	100

The final table measures access to; confidence in; and minimum usage per week of e-mail - the most basic function and service of the Internet. Three-fifths (60%) had access to an e-mail account. Of this number, three-fifths (60%) indicated that they utilized their e-mail account at least once per week and

seven-tenths (70%) of those who used their e-mail accounts at least once per week were confident in using these e-mail accounts.

Table 7.

Factors involved in Librarians use of Internet E-mail.

Factors	N	f	%
E-mail Access	15		
Yes		9	60
No		5	40
Total		15	100
Use Once per Week	10		
Yes		6	60
No		4	40
Total		10	100
Confident in Use	10		
Yes		7	70
No		3	30
Total		10	100

The final question asked was whether or not the

librarians thought the Internet would be the basis of future reference services. It is worth noting that ten of fourteen (71%) responses indicated that the Internet will be the basis of future reference services.

It is also worthy of note that the reference staff had a positive outlook on the Internet, but unsolicited comments from the staff seem to suggest the following caveats: 1) before electronic resources replace print there has to be some standards of publication installed on the Internet; 2) the Internet will only be a supplement to present reference services, because the information can change daily in it's quality and location; 3) other electronic resources, such as CD-ROM, local area networks, and full-text databases, will also grow in importance such that the Internet will not be the primary basis of future reference services; 4) until librarians and/or other information professionals become more involved in the cataloging and verification of information, much of what is on the Internet will remain nothing more than data rather than usable reference information; 5) the amount of time a search takes, as well as equipment and training requirements, will continue to be a negative factor in the progress toward integrating the Internet into everyday library services; and 6) failing to budget for staff with degrees in computer science will put

the library at the mercy of costly computer consultants or not-so competent technicians at the local computer store.

CONCLUSION

It has been the unique position of the Cleveland Heights Public Library and it's three branch libraries to be in the forefront of technology. This is the case because of their affiliation with the Cleveland Public Library and an administration and staff that is always looking to incorporate the newest advances in technology into their library to serve their patrons more efficiently and effectively. It is with this background knowledge that this investigator tested the hypothesis that the Cleveland Heights Public Library was unprepared for the Internet. However, after surveying the reference staff, it is clear that they have the essentials, such as terminals available for searching, e-mail accounts, and familiarity with the basic navigational tools and protocols, which will allow them to incorporate Internet resources as a supplement to their reference services.

APPENDIX A

Internet Survey

Identify the first source that made you aware of the existence of the Internet?

__ professional journal
__ colleague/friend
__ newspaper
__ radio
__ workshop
__ computer BBS
__ television
__ other: _____

Identify the source that is the most informative about the Internet for you?

__ professional journal
__ colleague/friend
__ newspaper
__ radio
__ workshop
__ computer BBS
__ television
__ other: _____

Have you been trained to search on the Internet?

__Yes __No

Do you have a computer/terminal available to you for searching the Internet?

__Yes __No

Do you spend time searching the Internet?

__Yes __No

Where is the majority of this search time spent?

__At work __At home

Where would you prefer to spend time searching the Internet?

__At work __At home

Estimate how much time you spend searching the Internet?

__No time __less than one hour __one or more hours

Check all items that you are aware.

__Gopher
__TCP/IP
__WAIS
__FTP
__Telnet
__Archie

Check all items that you have successfully operated.

__Gopher
__TCP/IP
__WAIS
__FTP
__Telnet
__Archie

Do you have access to Internet e-mail?
__Yes __No

If so, do you use your e-mail account at least once a week?
__Yes __No

If so, do you feel confident about you abilities in using your e-mail account?
__Yes __No

"The Internet will be the basis of future reference services as more and more sources move to electronic format. Do you agree with the previous statement?
__Yes __No

APPENDIX B

Re: Internet Survey

September 12,1994

Dear Librarian:

I am a graduate student in the School of Library and Information Science at Kent State University. As a part of the requirements for my master's degree I am conducting a study about the Internet and reference librarians at the Cleveland Heights Public Library. The enclosed questionaire elicits information that will help me to measure the content knowledge librarians on staff possess about the Internet. This information would be useful to both theorists and practitioners in the field of library and information science.

Confidentiality and anonymity are guaranteed as you do not need to sign your name to individual questionnaires; only the investigator has access to the survey data. There is no penalty of any kind if you should choose to withdraw from participation at any time. While your cooperation is essential to the success of this study, it is, of course, voluntary. A copy of the results of the study will be available upon request.

If you have any further questions, please contact me at (216) 451-1312 or Dr. Lois Buttlar, my research advisor, at (216) 672-2782. If you have any questions regarding research at Kent State University you may contact Dr. Eugene Wenninger, Office of Research and Sponsored Programs, at (216) 672-2851.

Thank you very much for your cooperation; it is much appreciated.

Sincerely,

Matthew J. Augustine

Matthew J. Augustine
Graduate Student

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7. Margaret Lippert, "Continuing Computer Competence: A Training Program for the 90's," Bulletin of the American Society for Information Science 20 (February/March 1994): 19.

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10. Diane Kovacs, Barbara F. Schloman, Julie A. McDaniel, "A Model for Planning and Providing Reference Services Using Internet Resources," Library Trends 42 (Spring 1994): 641.

11. Ibid., 642.

12. Ibid., 644.

13. Yuan Zhou, "From Smart Guesser to Smart Navigator: Changes in Collection Development for Research Libraries in a Network Environment," Library Trends 42(Spring 1994): 658.

14. Ibid., 658.

15. Jean Armour Polly and Steve Cisler, "Should Public Libraries Connect?" Library Journal 119 (March 15 1994): 26.

16. Cleveland Heights Public Library is a model example of this trend by telephone and cable television company. The local cable television company, Cablevision, has offered to give shared access on a T1 line to the Internet via the existing cable in their building. The Cleveland Public Library will administrate the connection from their Automations department.

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